

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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## (54) FILING DEVICES

(71) I, WILLIAM CHARLES MARKHAM, of 20, Manor Farm Avenue, Shepperton Surrey, formerly of 34, Ravenswood Gardens, The Grove, Isleworth, Middlesex, a British Subject, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 The present invention relates to devices for releasably engaging and fastening flexible filing prongs means (hereinafter referred to as prong fasteners), to document binders incorporating said fasteners and to methods of manufacturing said binders and said fasteners.

15 In the present context, the phrase document binder is intended to identify in broad terms the combination of flexible filing prong means (hereinafter referred to as prong means unless the more specific terms prong or prongs are indicated) mounted on a prong support with a prong fastener for releasably engaging and fastening the portion of the prong means which in use emerges free after passing through perforated documents.

25 A well-known type of document binder is a binder file wherein successive foldings of a stout manilla sheet define a front panel, a first inner flange, a spine, a second inner flange and a rear panel. A pair of spaced prongs in the form of tightly coiled helical springs are attached to said second inner flange (representing the prong support referred to above) and stand self-erect therefrom in their normal unrestrained attitude, said first inner flange being provided with correspondingly spaced eyeletted apertures. In use, the free ends of the prongs are passed through perforations in the documents, through the eyeletted apertures and finally through slots in a prong fastener defining a loose clamping plate. Said ends are provided with terminal studs which will only pass through the plate if the prongs are flexed by the user so that the studs are directed towards widened por-

tions of the slots and will prevent the clamping plate from falling off the prongs when the latter are allowed to spring back into portions of the slots which are too small for the studs to slip through them.

The provision for retaining the clamping plate free sliding upon the prongs lengthwise thereof and yet captive thereto while the prongs are unfastened greatly facilitates the inspection of the documents by the user especially when the documents are somewhat voluminous and therefore more prone to slip off the prongs. The documents may be held pressed between the second inner flange and the clamping plate, which abuts against the outer face of the first inner flange, by pulling each prong in turn, bending it over at right angles and securing it under a retaining hook provided near the slot through which the prong is threaded.

One of the drawbacks of the prior art binder referred to is that each prong in turn must be passed endwise through an eyelet and through a slot before it can be anchored. Similarly, it must be pulled through endwise in a reverse sequence before it can be freed for insertion or removal of documents. These operations are time consuming and tiresome when repeated very many times in the course of a day, such as would be the case in a busy filing room. A similar criticism may of course be levelled at any prong fastener which requires the prong means to be threaded therethrough. The binder file described above is in fact one of the most convenient in use and has been widely accepted in its present form for many decades.

The object of the present invention is to provide improved prong fasteners and document binders incorporating said fasteners in addition to improved manufacturing methods thereof.

According to the present invention there is provided a prong fastener adapted to co-operate with longitudinally extending prong means having omnidirectional lateral flexibility

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mounted on a prong support, said fastener comprising a generally flat body in which there is integrally defined an arcuate coupling up slot curving inwardly of said body across a longitudinal edge thereof into a re-entrant prong retaining part, the slot being so constructed and arranged in relation to a co-operating prong on its support that the prong once side flexed into the re-entrant part by the user will have a tendency to stay captive thereat until deliberately side flexed out by the user, and said slot having a boundary edge adapted to act as a tangential guide for side flexing said prong therealong with a generally arcuate motion into and out of the re-entrant part, said fastener further comprising anchoring means for releasably securing said prong means to the body.

According to the present invention there is also provided a document file including the above-defined prong fastener and further comprising a cover, having a front panel, a rear panel, an intervening spine and a pair of longitudinally extending prongs having omnidirectional lateral flexibility, said fastener comprising two symmetrical coupling up slots and said pair of prongs being each mounted upon a support within said cover and so constituted and arranged that when the fastener is urged towards the unrestrained prongs by the user. The two coupling up slots will be positioned ready to receive said prongs after the latter have been slightly side flexed therein by the user.

Two coupling up slots may be adapted to co-operate with a pair of spaced filing prongs in such manner that the user will be enabled to free both prongs at once by flexing them towards each other with thumb and forefinger of one hand.

There may additionally be provided anchoring means adjacent each coupling up slots, each anchoring means being adapted to co-operate with a filing prong so that the user will be enabled to release both prongs at once therefrom by pressing on one with the thumb and on the other with the forefinger of one hand.

One manufacturing method according to the present invention consists in applying a blank, such as a metal blank, to a bearing part of a document binder and simultaneously shaping the blank into the prong fastener as defined and attaching it to said bearing part in a single operation, such as a press operation.

Another manufacturing method according to the present invention consists in offering up a bearing part of a document binder to an injection moulding machine and injection moulding a prong fastener as defined in situ.

The invention will now be described by way of example with reference to the accompanying diagrammatic drawings, wherein:—

Fig. 1 illustrates a document binder in accordance with the invention;

Figures 2 to 4 are details of Fig. 1;

Figure 5 illustrates a prong fastener in accordance with the invention, incorporated in a document binder;

Figure 6 to 8 are details of Fig. 5;

Fig. 9 illustrates a terminal stud for a prong

With reference to Fig. 1, a binder file generally indicated at 1 comprises two hinged panels 2A and 2B, two inwardly extending flanges 3A and 3B and a spine 3C. Prong means comprising two prongs 4A and 4B in the form of tightly coiled helical springs are attached some 8cm apart to a prong support represented by flange 3B. A prong fastener 5 defining a clamping plate is fixed to flange 3A.

As seen in Fig. 1, prong fastener 5 is an inverted-U channel with closely spaced limbs straddling flange 3A and comprises struck out portions 6A and 6B representing prong anchoring means in the form of two anchoring hooks and cut-aways 7A and 7B representing coupling up slots for engaging the prongs before the prongs are anchored.

The cut-aways are symmetrical in shape and referring, for example, to 7A, this is provided with an entry portion 8A of generally arcuate shape for enabling the prong 4A to be side flexed in and out tangentially to the boundary edges. The arcuate portion 8A terminates in a re-entrant portion 9A.

Prong 4A as shown in Fig. 1 is in the released position, in which the tight coils tend to keep it erect, substantially at right angles to the flange 3B and, therefore, within the re-entrant portion 9A which provides side and front location.

If prong 4B is also released (it is in fact shown in the anchored position in Fig. 1), it will be possible to inspect the documents (not shown) contained in the file between flanges 3A and 3B by simply opening out the flanges a little when the prongs will slide longitudinally in the re-entrant portions 9A and 9B, arch upwards and bear more firmly against the re-entrant portions. As the documents are turned over the prongs stay engaged with the prong fastener 5 in what may be regarded as a captive position in so far as any outward pull on the documents is effectively resisted at least in the normal use of the file.

If the documents are to be removed from the file, the prongs are simply flexed together between thumb and forefinger, a little below flange 3A, and the flexible prongs will yield and swing free tangentially of the lower arcuate edges of cut-aways 7A and 7B. Thumb and forefinger may also be used to restore the prongs to the captive position by flexing them towards each other sufficiently to feed them simultaneously one in cut-away 7A and the other in cut-away 7B.

It will have been appreciated, of course, that the prong entry of cut-away 7A and the prong entry of cut-away 7B are more closely spaced than the re-entrant portions 9A and 9B, which are separated by a distance approximately

equal to the spacing between prongs 4A and 4B at the points of attachment to flange 3B.

After inspection of the documents they may be firmly secured in the file by pressing on the prong fastener 5 with the left hand while pulling slightly each prong in turn with the right hand, bending it towards, across and finally into the adjacent anchoring hook, the object of the slight pull being to anchor the prong under some tension so as to compress the documents.

By pressing with the thumb of the left hand behind anchored prong 4B just to the right of hook 6B and with the forefinger of the same hand behind the anchored prong 4A just to the left of hook 6A, the user may release both prongs simultaneously with a gentle forward motion of the left hand. He may then follow through and free both prongs at once from the captive position by using thumb and forefinger of the right hand in the manner hereinbefore referred to. The user may in fact prefer to use the left hand for both operations or indeed the right hand, both alternatives being quite convenient. With a little skill the action of freeing the prongs completely can be almost instantaneous.

In Fig. 1 prong 4B is shown secured under hook 6B. Despite the pull exerted by the slightly stretched portion between the cut-away 7B and the hook 6B, the prong is restrained in the longitudinal direction because the height of the hook and the clearance between opposite edges are such that the prong must flex under the hook when it is pulled thereacross and form a bow directed downward in the space left vacant by the struck out hook. This is shown more clearly in Fig. 2, wherein edges 10A and 10B on the one hand and edges 11A and 11B on the other tend to dig into the coils of the prong 12 because of the bow.

Prong fastener 5 was simultaneously formed and attached to flange 3A by first slipping a U blank over flange 3A so that the latter was snugly located between the limbs of the U and then subjecting the blank and the flange therein to the action of a punch and die set designed to produce cut-aways 7A and 7B and at the same time strike out and form hooks 6A and 6B in a single press stroke. I have found that the manilla trapped in the hooks and the effect of the pressure exerted by the tools of the limbs of the U are adequate to fix the prong fastener securely in position without the need for eyelets, rivets or the like. If need be, however, depressions such as in criss-cross fashion may be made in the blank to assist the retention of the prong fastener upon the flange and perhaps enhance appearance at the same time.

Fig. 3 is a cross-section along a line that may be imagined as equivalent to line A—A' in Fig. 1 and refers to a preformed blank to be slipped over a pre-cut file flange and then

fastened to the flange by pressing in and indenting between press tools. It will be noted that walls 13A and 13B on the one hand and 14A and 14B on the other are in close contact. In the embodiment of Fig. 1 a struck out portion of flange 3A would be trapped in between. In the modification of Fig. 4 doming provides greater hook strength and rigidity.

Referring now to Fig. 5, wherein parts 1A, 2A, 2B, 3, 11B, 4A and 4B correspond to parts 2A, 3A, 3B, 3C, 2B, 4B and 4A, respectively, in Fig. 1, a prong fastener 6 is shown affixed to flange 2A by means of rivets 7A and 7B. Fastener 6 is provided with two coupling up recesses 8A and 8B (corresponding to cut-aways 7B and 7A in Fig. 1) into and out of which the prongs 4A and 4B terminating in studs 5A and 5B which serve a purpose presently to be explained, may be guided in tangential contact with the boundary edges.

The recesses are symmetrical and may be described with reference to one of them, say, 8A, which is broadly defined by a generally convex edge 9, a re-entrant edge 10 and a generally concave edge 11 in tangential contact with which prong 4A may be swung out of recess 8A by the user. The edges 9 and 11 are in fact similar to the corresponding edges shown in Fig. 1, but the two edges 9 (we are now considering both coupling up recesses) have been made to arcuate inwardly towards the centre of fastener 6 from points which are spaced apart by approximately the same distance that separates the points of attachment of the prongs to flange 2B. This refinement facilitates tangential sliding action in coupling up the prongs, so that it becomes easier to guide them in simultaneously with the right hand in the manner referred to in connection with Fig. 1.

Further refinements are concerned with the construction of the prong hooks generally shown at A and B. The hooks are symmetrically oriented and it will be convenient to describe them with reference to A, shown enlarged in Fig. 6.

Referring to Fig. 6, both the upper and the lower surface of the hook are part-hemispherical and may in fact be imagined as obtained by cutting out a throat to the contour shown from a hemispherical shell raised from the base. The fully domed geometry of the hook and the wide part-circular root 12 provide great strength and rigidity without introducing manufacturing complications.

By forming a circular base aperture partly bounded by the edge 13 all around the throat of the hook, there is added to the manufacturing convenience the operational feature of providing a hollow into which a prong is gradually induced to bend quite naturally when it is pulled across the throat of the hook, provided the clearance between the terminal overhanging part of the hook and the part of edge 13 thereunder is sufficient to enable the prong to

make a gradual start until it suddenly gives under the hook and lodges itself in the deeper part of the throat, where it assumes the swan neck configuration shown in Fig. 5 which helps

5 in keeping the prong in tension.  
The base of the hemisphere to which the hook may be said to belong will naturally be chosen in relation to the diameter of the prong. With a 3.5 mm diameter prong I have success-  
10 fully adopted a hemispherical base measuring 12 mm across.

To assist the user in ensuring that a prong has been properly secured under its anchoring hook, a detent action has been provided. This is achieved by forming in the hook a cavity 14 and a cavity 15 (Fig. 6). The arrangement is such that in the act of pulling the prong across the throat a sudden resistance is felt after a gradual entry and when it has been  
20 overcome the prong swings hard against the cavities with a snap. By allowing the hook to jut out a little beyond the vertical axis of the notional hemisphere referred to, the underside thereof provides an effective dead-centre region for the prong to snap over, which can  
25 moreover be further enhanced by forming a slight ribbing.

Fig. 7 shows that cavities 14 and 15 are aligned in a direction D1 forming an angle as shown with the longitudinal axis D2 of prong fastener 6 and that the front cavity 14 is positioned slightly forward with respect to that part of the prong which is restrained by the re-entrant edge 10. This is intended to  
30 assist both hooking on and hooking off the prong.

When the prong is drawn across the throat of the hook, it will tend to find an easier entry by dealing first with one corner of the hook (the leading corner) and then with the other in quick succession. A very snappy engagement is thus secured with little effort on the part of the user.

The final attitude of the prong when properly anchored is as in fact shown in Fig. 7. This position is stable as long as the prong is in contact with the rear cavity 15, but firm side pressure with the thumb in the manner depicted gives rise to a definite trigger action in which the energy stored in the distorted prong is suddenly released and the prongs swing round and up to assume the attitude of prong 5B in Fig. 5. If both prongs are under the hooks, they may be triggered off simultaneously by using the thumb and forefinger of the left  
55 hand.

As a safeguard against accidental triggering, a further cavity 16 is provided in the edge 13. In this way pressure applied from above such as in the act of closing the file tends to force a prong in the cavity 16 (see Fig. 6) wherein a component of force tending to urge the prong over the dead centre of the hook is resisted.

65 In Fig. 5 prong 4B is shown in the captive

position after release from the hook B. In such position, flanges 2A and 2B may be urged apart and the prong 4B will slide along the re-entrant edge of recess 8B, without however becoming disengaged from prong fastener 6 because its own resiliency will tend to urge it more and more against the re-entrant edge, which can be made much more pronounced than shown, if desired. When both prongs are erect, they may be swung free from the captive position by simultaneously flexing them towards each other with one hand (e.g. between thumb and forefinger), when the edges 11 of the coupling up recesses will act as guides to facilitate this action.

Unlike its counterpart in Fig. 1, prong fastener 6 is a single plate rather than one folded in two in the form of a U channel. This means that the underside of flange 2A is exposed where it must be cut in correspondence of recesses 8A and 8B and Fig. 8 shows how the cuts have been protected against fraying.

Fig. 8 is a view of a portion of the underside of flange 2A and of prong fastener 6, the latter lifted slightly from the position occupied in Fig. 5. It will be seen that the leading edge of prong fastener 6 forms a strengthening ribbing and a channel 17 into which the edge of flange 2A fits. Similarly, a channel 18 is formed around the region of the coupling up recess and this fits into the cut-away 19 of flange 2A.

Fig. 8 illustrates in addition the purpose of studs 5A and 5B. When prong fastener 6 is fitted in the manner shown in Fig. 5 and the prongs are erect as at 4B, by pulling each prong in turn until they cannot be pulled any further because of the interference with the heads of the studs, the necks of the studs will fit in the re-entrant edges and the prongs will then assume the arcuate configuration depicted in Fig. 8, which greatly facilitates the turning over of the documents in the file with less binding at the perforations.

Fig. 9 shows the construction of a terminal stud moulded in polypropylene. It comprises a head 20 which will not pass through a prong fastener such as 6 in Fig. 5 when the prong 23 to which the stud is attached is pulled up to the position shown in Fig. 8. The stud further comprises a neck 21, which fits snugly against the re-entrant edge such as 10 in Fig. 5, a base portion 22 tapered to the diameter of prong 23 and a stem 24 forced into the end coils of prong 23. The position shown in Fig. 8 may in addition be attained by snapping the neck 21 sideways into the re-entrant edge.

A prong fastener as illustrated in Fig. 5 has been successfully moulded in polypropylene. It was found possible to replace rivets 7A and 7B with integrally moulded rearward projections peened over by means of a heated tool to form retaining heads. A further modification consists in raising a slight projection in front of cavity such as 16 in Fig. 6 with a slope

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towards the front. The ramp thus produced offers an additional safeguard against accidental release in that a prong will not snap out unless pressure is applied both forward and upward.

5 A modification which may be applied to both the fasteners of Fig. 1 and Fig. 5 will be described as if it had been incorporated in Fig. 5 wherein the clearance between nose 25 and edge 11 must be imagined as being 10 insufficient to allow a prong such as 4A to pass sideways while erect. The modification consists in providing portions of nose 25 and 15 edge 11 which have the necessary clearance and between which the prong will be urged when flexed by the user.

A modified document binder consists in mounting either the prong fastener 5 in Fig. 1 or the prong fastener 6 in Fig. 5 upon one 20 limb, of a U-channel of manilla or other suitable material and a pair of prongs as shown in either figure upon the other limb, the width of the limbs being a little in excess of the length of the prong fastener. The U-channel 25 with the two prongs and the prong fastener may be used for attachment to an ordinary folder which can then be converted to a binder file. If releasably attached, the channel and documents held in it may eventually be put 30 in a transfer file and the folder will then ready for re-use.

#### WHAT I CLAIM IS:—

1. A prong fastener adapted to co-operate with longitudinally extending prong means 35 having omnidirectional lateral flexibility mounted on a prong support, said fastener comprising a generally flat body in which there is integrally defined an arcuate coupling up slot curving inwardly of said body across 40 longitudinal edge thereof into a re-entrant prong retaining part, the slot being so constructed and arranged in relation to a co-operating prong on its support that the prong once side flexed into the re-entrant part by the user 45 will have a tendency to stay captive thereat until deliberately side flexed out by the user, and said slot having a boundary edge adapted to act as a tangential guide for side flexing said prong therealong with a generally 50 arcuate motion into and out of the re-entrant part, said fastener further comprising anchoring means for releasably securing said prong means to the body.

2. A prong fastener adapted to co-operate 55 with a pair of longitudinally extending prongs each having omnidirectional lateral flexibility, spacedly mounted upon a prong support, said fastener comprising a generally flat longitudinally extending body in which there are integrally defined a pair of arcuate coupling up 60 slots extending inwardly of said body across a longitudinal edge thereof and curving symmetrically outwards relative to the midsection of said body into respective re-entrant prong 65 retaining parts spaced to correspond approxi-

mately to the spacing between the prongs, each slot being so constructed and arranged in relation to the associated prong and said support that said associated prong once side flexed by the user first towards said midsection and then away from it into the re-entrant part will have a tendency to stay captive in said part until 70 deliberately flexed out by the user with a reverse motion, and said slot having a boundary edge adapted to act as a tangential guide for 75 side flexing said co-operating prong therealong into and out of the re-entrant part, and a pair of spaced anchoring means for releasably securing the prongs to the body.

3. A prong fastener as claimed in claim 1 80 or in claim 2, wherein said boundary edge comprises arcuate portions of differing curvature.

4. A prong fastener as claimed in any one of claims 1 to 3, wherein said boundary edge 85 comprises a generally concave portion bounding one side of the slot from said longitudinal edge to the re-entrant prong retaining part.

5. A prong fastener as claimed in claim 4, wherein said boundary edge comprises a generally 90 convex portion bounding the opposite side of the slot from said longitudinal edge to the re-entrant prong retaining part.

6. A prong fastener as claimed in any one of preceding claims, wherein the coupling up 95 slot narrows from the region where it cuts through the longitudinal edge of the body to the region where it terminates as the re-entrant prong retaining part.

7. A prong fastener as claimed in claim 2, 100 wherein each coupling up slot comprises a generally concave boundary edge portion, the two concave boundary edge portions being symmetrical and so arranged that the user may uncouple both prongs at once by urging them 105 together between thumb and forefinger of one hand and causing them to swing out, each tangentially the associated concave boundary edge portion.

8. A prong fastener as claimed in claim 2, 110 or in claim 7, wherein each coupling up slot comprises a generally convex edge portion, the two convex edge portions being symmetrical and so arranged that the user may couple up both prongs at once by urging 115 them together between forefinger and thumb of one hand and causing them to swing into the re-entrant prong retaining parts each tangentially to the associated convex boundary edge portion. 120

9. A prong fastener as claimed in any one of preceding claims, wherein the/or each anchoring means is an anchoring hook, the throat of the hook facing said longitudinal edge.

10. A prong fastener as claimed in claim 125 9, wherein the hook is integral with the body and the underside of the hook overlies a cavity in said body, the hook and the cavity being so constructed and arranged that when the fastener is used in co-operation with a prong and 130

the prong is pulled across the throat by the user the prong will flex under the hook into the cavity in swan-neck fashion and thus enhance frictional engagement with the hook.

5 11. A prong fastener as claimed in claim 9 or in claim 10, wherein the hook is domed for rigidity.

10 12. A prong fastener as claimed in any one of claims 9 to 11 wherein the hook is so constructed and arranged as to provide a dead centre action for a co-operating resilient prong such as in the form of a tightly coiled helical spring which as a result will have a tendency to snap in and snap out when urged, respectively, into and out of the throat of the hook by the user.

15 13. A prong fastener as claimed in any one of claims 10 to 12, wherein the hook and the cavity are so constructed and arranged that when a co-operating resilient prong such as in the form of tightly coiled helical spring is fastened under the hook the free end of the prong will tend to protrude from the hook backswept with relation to the longitudinal axis of the body and slightly raised from the body for the convenience of the user in releasing the prong by applying pressure thereon towards said longitudinal edge.

20 14. A prong fastener as claimed in any one of claims 9 to 13, wherein the hook and the part of the body facing the underside of the hook are so constructed and arranged as to provide a trigger action for a co-operating resilient prong such as in the form of a tightly coiled helical spring which as a result will have a tendency to fly out of the hook from the fastened position when the user applies sufficient pressure on the prong in the direction towards said longitudinal edge of the body by virtue of the stress applied on the prong in the fastened position.

25 15. A prong fastener as claimed in any one of claims 12 to 14, wherein a light ribbing is provided at the periphery of said cavity over which a co-operating prong must ride in snapping in and out of the hook.

30 16. A prong fastener as claimed in any one of preceding claims, wherein the body is provided with integral projections for fixing the fastener to a support by passing the projections through apertures in the support and enlarging the protruding free ends of the projections to form retaining heads.

35 17. A prong fastener as claimed in any one of claims 1 to 11, comprising a strip of metal which has been folded along the longitudinal axis to define a generally U-shaped narrow channel wherein the limbs of the channel form integral upper and lower plates respectively of the fastener and the fold represent said longitudinal edge, a pair of coupling up slots being provided each in the form of registering cut-outs in the two plates and a pair of anchoring means being provided each having resulted from simultaneously striking out from the two

plates an anchoring hook in the general shape of two superimposed L's having the short limbs rising above the upper plate from lower and upper plates respectively and the long limbs overlying the cavity formed in the two plates, the two long limbs being joined by the struck out portion of the longitudinal edge.

70 18. A prong fastener as claimed in any one of claims 11 to 16, wherein the fastener is a one piece injection moulding in the general form of a plate in which there are integrally defined the body, a pair of coupling up slots and an associated pair of anchoring means in the form of domed anchoring hooks each of which is a sector of a shell approximately hemispherical including a domed top and a root attaching the top cantilever-fashion to the body, the top overlying a generally circular cavity in the body and the throat of the hook extending between the two effectively as far as the chord of the root cross-section allows.

75 19. A prong fastener as claimed in claim 18, wherein the diameter of the base of the domed top, that of the circular cavity, the region where root and top join, and the spacing between base and cavity are such that a resilient prong such as in the form of a tightly coiled helical spring when pulled across the throat by the user will bend swan-neck fashion into the cavity, swing into the annular space between the circular contour of the base and that of the cavity, overcome the dead centre arising approximately at the point of alignment with a base diameter, and snap into a stable position against the root.

80 20. A prong fastener as claimed in claim 18 or in claim 19, wherein the prolongations of the chords of one and other root respectively intersect in the space in front of the coupling up slots so that when a pair of resilient prongs such as in the form of tightly coiled helical springs are lodged in the throats of the respective anchoring hooks in line with the chords they will protrude from the hooks backswept and roughly aligned with said prolongations.

85 21. A prong fastener as claimed in any one of claims 18 to 20, wherein the underside of the fastener, i.e. the side that in use will face a stack of documents, is provided with a depending lip along said longitudinal edge.

90 22. A prong fastener as claimed in claim 21, wherein a depending frame is provided on the underside of the fastener around each coupling up slot, the frames and the lip being intended to fit and act as beading for corresponding cut-ways and longitudinal edge respectively of a support, e.g. a document file flange, to which the fastener may be permanently attached.

95 23. A documents file including a prong fastener as claimed in any one of preceding claims with the exception of claim 1 comprising a cover, having a front panel, a rear panel,

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- an intervening spine and a pair of longitudinally extending prongs each having omnidirectional lateral flexibility, said fastener and said pair of prongs being each mounted upon a support within said cover and so constituted and arranged that when the fastener is urged towards the unrestrained prongs by the user the two coupling up slots will be positioned ready to receive said prongs after the latter have been slightly side flexed therein by the user.
24. A document file as claimed in claim 23, wherein the prongs support is a cover inner flange extending between the rear panel and the spine.
25. A document file as claimed in claim 23 or in claim 24, wherein the fastener support is a cover inner flange extending between the front panel and the spine.
26. A document file as claimed in claim 23 or in claim 24, wherein the fastener support is a tab which bears the fastener at one end and is removably or permanently attached to an inner part of the cover or to a part attached to the inside of the cover.
27. A document file as claimed in any one of claims 23 to 26, wherein successive folding of a web of suitable material define the front panel, the spine, the rear panel and the or each inner flange.
28. A document file as claimed in any one of claims 23 to 27, wherein the longitudinally extending prongs are in the form of closely coiled helical springs.
29. A document file as claimed in claim 28, wherein the free end of each spring is provided with a stud having a groove for slotting into the associated re-entrant part of the fastener.
30. A method of manufacturing a document file including a prong fastener as at claim 17, wherein the U-shaped channel in blank form is made to straddle a support member and the coupling up slots and the anchoring hooks are formed by subjecting the channel in situ to the action of a suitable punch and die set.
31. A method of manufacturing a document file including a prong fastener as claimed in any one of claims 18 to 22, the underside of the fastener being provided with tubular projections, comprising the steps of forming cut-outs in a support member corresponding to the coupling up slots, positioning the fastener over the member with the coupling up slots in register with the cut-outs and securing the fastener to the support by passing the tubular projections through the support and enlarging the protruding ends thereof so as to form retaining heads.
32. A method of manufacturing a document file including a prong fastener as claimed in any one of claims 18 to 22 comprising the steps of offering up a bearing part of a document file, e.g. an inner file flange, to an injection moulding machine and injection moulding said fastener in situ.
33. A prong fastener or a document file incorporating said fastener, substantially as described with reference to Figures 1 to 4 or Figures 5 to 8 or additionally in the case of the document file Fig. 9 of the attached diagrammatic drawings.

W. C. MARKHAM.

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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of  
the Original on a reduced scale  
Sheet 1



